

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A chemical processing apparatus comprising: a pressure vessel; and a microreactor disposed within the pressure vessel, the pressure vessel constructed and arranged to maintain the pressure vessel and the microreactor at elevated pressure when a chemical operation is performed within the apparatus, ~~wherein the microreactor comprising~~ comprises a material selected from the group consisting of nonmetallic elements of groups III, IV and V of the Periodic Table, ceramics, glasses, glass ceramics, polymers, composite materials, silicon and metals, wherein the apparatus further comprises a medium communicating with the microreactor arranged and positioned so as to be capable of providing thermal exchange between the microreactor and the pressure vessel.
2. The chemical processing apparatus of claim 1 wherein the pressure vessel comprises an autoclave.
3. (Cancelled)
4. (Currently Amended) The chemical processing apparatus of claim 1 ~~claim 3~~ wherein the heat conductive medium comprises SiC.
- 5-10. (Cancelled)
11. (New) The chemical apparatus of claim 4 wherein the SiC comprises SiC in particulate form.
12. (New) The chemical apparatus of claim 11 wherein the SiC in particulate form has a particle size of between about 5.0 microns to about 1000.0 microns.
13. (New) The chemical apparatus of claim 12 wherein the SiC in particulate form has a particle size of between about 100.0 microns and 500.0 microns.
14. (New) The chemical apparatus of claim 1 wherein the microreactor is supported within the inner volume of the pressure vessel by the heat conductive medium.
15. (New) The chemical apparatus of claim 14 wherein the microreactor is supported within the inner volume of the pressure vessel by the heat conductive medium such that temperature control for the microreactor can be achieved by controlling the temperature of the pressure vessel rather than by directly controlling the temperature of the microreactor itself.